DOCUMENT RESUME

ED 406 585 CE 073 882

AUTHOR Bynner, John; Parsons, Samantha
TITLE Does Numeracy Matter? Evidence from the National Child Development Study on the Impact of Poor Numeracy on Adult Life.
INSTITUTION Basic Skills Agency, London (England).
REPORT NO ISBN-1-85990-060-7
PUB DATE Jan 97
NOTE 53p.; For a related document, see CE 073 883.
AVAILABLE FROM Basic Skills Agency, Commonwealth House, 1-19 New Oxford Street, London WC1A 1NU, England, United Kingdom (6.50 British pounds).
PUB TYPE Reports - Research (143)
EDRS PRICE MF01/PC03 Plus Postage.
DESCRIPTORS Adult Basic Education; *Adult Literacy; Basic Skills; Developed Nations; Dropouts; *Employment Patterns; Employment Potential; *Employment Problems; Foreign Countries; *Illiteracy; Literacy Education; Longitudinal Studies; *Numeracy
IDENTIFIERS *United Kingdom

ABSTRACT

Data were obtained from the National Child Development Study (NCDS), a large-scale longitudinal study in the United Kingdom following up a sample of people born in a single week in 1958 through to adult life, to demonstrate that poor numeracy skills have a major impact. At age 37, a 10 percent sample of 1,714 cohort members were interviewed and tested for functional literacy and numeracy skills. The assessments were composed of tasks that cohort members were likely to come across in their everyday lives: eight literacy and nine numeracy tasks, each with two or three subquestions. Analysis was designed to see to what extent numeracy problems were subsumed under literacy problems or constituted a significant problem in their own right. Cohort members were placed in four categories: poor numeracy and literacy; poor numeracy and competent literacy; competent numeracy and poor literacy; and competent numeracy and literacy. Seventy percent were competent in both. Evidence showed people without numeracy skills left school early, frequently without qualifications, and had more difficulty getting and maintaining full-time employment. The jobs entered were generally low grade with limited training opportunities and poor pay and prospects. Women with numeracy difficulties appeared especially vulnerable to exclusion from the clerical and sales jobs to which they aspired. Teachers had very limited success in identifying incipient numeracy problems. Women tended to have less competence in certain kinds of numeracy. (The numeracy tasks used in the assessments are appended.) (YLB)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED 406 585

Does Numeracy Matter?

EVIDENCE FROM THE NATIONAL CHILD DEVELOPMENT STUDY ON THE IMPACT OF POOR NUMERACY ON ADULT LIFE

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☑ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

B. Hiscock

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

CE 073 682

The Basic Skills Agency

BEST COPY AVAILABLE

Contents

Foreword 2

Introduction 3
- National Child Development Study 4
- Assessment of numeracy and literacy 4

Is Numeracy a Problem? 10
- Employment Status 10
- Occupation 13
- Work-based training 15
- Income 16
- Promotion 17
- Other Problems? 19
- Summary 19
- People with numeracy problems 20

Where does the problem come from? 22
- School performance 22
- Early leaving and qualifications 24

Numeracy Matters 27

Appendix 29

References 48

© The Basic Skills Agency
Commonwealth House, 1-19 New Oxford Street, London WC1A 1NU.
All rights reserved. No part of this publication may be photocopied, recorded or otherwise reproduced, stored in a retrieval system or transmitted in any form or by any electronic or mechanical means without prior permission of the copyright owner.

ISBN 1 85990 060 7
Design: Studio 21
Published January 1997

BEST COPY AVAILABLE

Does Numeracy Matter?

EVIDENCE FROM THE NATIONAL CHILD DEVELOPMENT STUDY ON THE IMPACT OF POOR NUMERACY ON ADULT LIFE

John Bynner and Samantha Parsons
Social Statistics Research Unit
City University

BEST COPY AVAILABLE

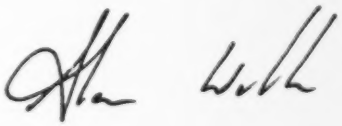
Foreword

WE all know that people that have poor literacy skills suffer from some real disadvantages in work and everyday life. It's obvious. We're all faced with ever more complex written information every day – and more and more of it. If you can't read and understand it you face a very real problem.

Up to now it's been difficult to say whether struggling with numbers is any great disadvantage. After all some people boast quite openly about being 'hopeless with figures'; and easy access to pocket calculators means that you can get by even if you don't know how to add or subtract or multiply or divide without a calculator. There's an assumption that being able to deal with figures is not of such central importance as being able to read and write.

'Does Numeracy Matter?' draws on the data in the National Child Development Study to demonstrate that poor numeracy skills have a major impact. It seems that poor numeracy is very much of a disadvantage for most people, particularly in the ever more demanding world of work. This is important to know at a time when children, young people and adults in the UK appear to have worse numeracy skills than people in our competitor countries.

I am grateful to Professor John Bynner and Samantha Parsons, at the Social Statistics Research Unit of City University, for undertaking this important study.



Alan Wells OBE
Director
The Basic Skills Agency

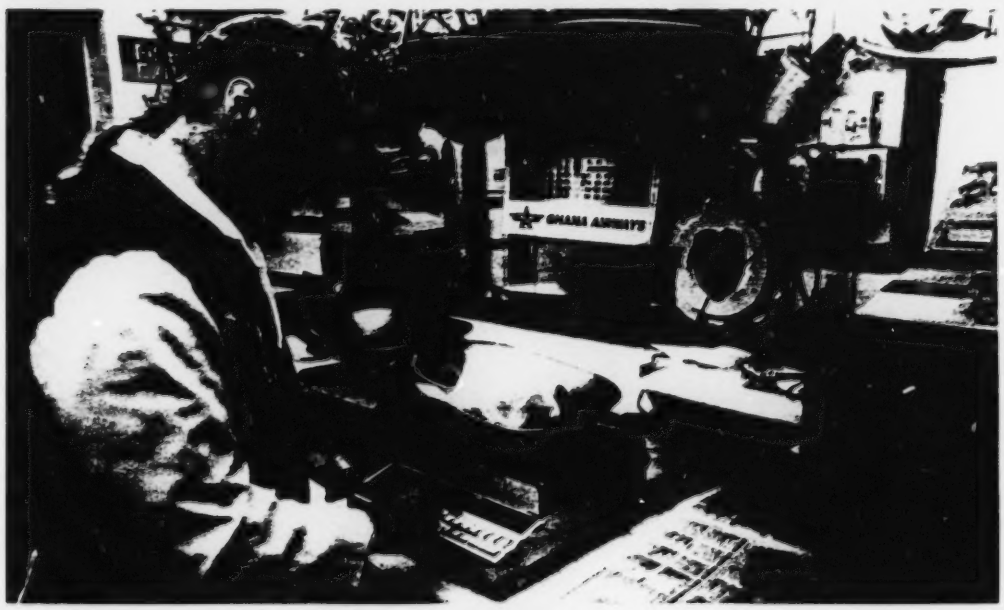
Introduction

LITERACY is a basic skill, that few people in a modern industrial society can afford to be without. The importance of numeracy is more questionable. Although most people acquire basic numeracy skills at school, and use them in their daily lives in shops and other places where computation, measurement or estimation is required, numeracy is not considered a pre-requisite for many types of job.

Recent evidence from surveys of employers carried out for the Basic Skills Agency suggests that this situation may be changing more rapidly than is generally realised. In a study carried out by the (then) Institute for Manpower Studies, it was concluded that only 1 in 8 jobs did not require any numeracy skills at all and only 1 in 4 had minimal numeracy requirements, i.e. skills at the Basic Skills Agency 'Foundation level' (Atkinson, Spilsbury and Williams, 1993).

Excluding management and professional occupations, two types of occupation – selling and clerical/secretarial jobs – which women enter in larger numbers than men, were those most likely to require numeracy skills. Yet we know from research on adults' basic skills that women are generally less proficient at numeracy than men, and are less at home with numbers when at school (Ekinsmyth and Bynner, 1994; Bynner, Morphy and Parsons, in press). Although there is some evidence that at school the gap in numeracy skills between boys and girls may be reducing (DfEE,1996), if two of the main areas of employment entered by women increasingly demand numeracy skills, then the need to close the numeracy gender gap takes on added importance.

But the problem is not restricted to women. The importance of basic skills generally in employment has been rising, with half of employers saying that they are more



important than five years ago (Atkinson and Spilsbury, 1993). Moreover, one in four reported that among job applicants, basic skills were just adequate or worse. Much of employers' concern is with poor literacy, but poor numeracy is also worrying many.

There is increasing demand for numeracy skills, especially in selling jobs and in semi-skilled manual jobs. Besides jobs requiring specific computational and measurement skills in the building trades, engineering and sales, a wide range of occupations, especially in offices, depend increasingly on the use of information technology, where some basic understanding of the logic of IT applications can increase efficiency. Demands for more financial accountability at all levels of employment also confront increasing numbers of employees with the need for competence in accounting and computational skills.

If these are the overall employment trends, what is their impact on individual workers? We need to know to what extent literacy difficulties and numeracy difficulties play a part in employment problems. Is literacy the fundamental problem which overrides any effects of poor numeracy? Or does numeracy represent a significant problem in its own right?

National Child Development Study

To answer these questions, we have drawn on data collected from adults aged 37 in the National Child Development Study. This large-scale longitudinal study has involved following up a sample of people born in a single week in 1958 through to adult life. Information was collected from the whole sample of cohort members at birth, 7, 11, and 16, using a variety of sources. These about their employment, family life and health. At age 37, a 10% sample of 1714 cohort members were interviewed. They were also tested for *functional* literacy and numeracy skills, which the Basic Skills Agency defines as:

"the ability to read, write and speak in English and use mathematics at a level necessary to function and progress at work and in society in general".

Assessment of numeracy and literacy

The assessments were designed specially for the survey by the National Foundation for Educational Research (NFER) and comprised a collection of tasks that cohort members were likely to come across in their everyday lives, such as calculating change in a shop. There were eight literacy and nine

numeracy tasks, each of which had two or three sub-questions. They were administered to respondents at the end of a 45 minute interview, and took on average about half an hour to complete. The numeracy tasks are shown in the Appendix.

The tasks were designed to tap skills at each of the different levels corresponding to the BSA standards: Foundation, Level 1 and Level 2. Table 1.1 gives examples of the kinds of performance standard set at each level by BSA in the four designated areas:

- handling cash;
- keeping numerical or graphical records;
- planning the use of time or money;
- calculating lengths, volumes and areas.

Table 1.1:
Simplified Assessment Scheme for Numeracy Skills

Numeracy Skill 1	*Foundation Level*	*Level 1*	*Level 2*
Handle cash or other financial transaction accurately, using till, calculator or ready reckoner as necessary	Transaction of up to seven similar items at a time, give change if necessary	Transactions of up to 20 items at a time, give change and calculate simple discounts	Transactions of any number of items at a time, and calculate complex discounts, OR use foreign currency

Numeracy Skill 2	*Foundation Level*	*Level 1*	*Level 2*
Keep records in numerical or graphical form	Record simple numerical information (eg count small batches)	Find the appropriate information and make a simple record based on it (eg simple stock-taking)	Find the appropriate information from several complex sources, make a record based on it (eg stock-taking and sales audit)

Numeracy Skill 3	*Foundation Level*	*Level 1*	*Level 2*
Make and monitor schedules or budgets in order to plan the use of time or money	Plan and monitor small amounts of time and money (up to 7 days or £250)	Plan and monitor amounts of time, money or expenditure (up to 4 weeks or £2,000)	Plan and monitor large amounts of time, money or spending (over 4 weeks or up to £20,000)

Numeracy Skill 4	*Foundation Level*	*Level 1*	*Level 2*
Calculate lengths, areas, weights or volumes accurately using appropriate tools, (eg rulers, calculators, etc)	Simple calculations on familiar items in either metric or imperial units	Calculations on items of unfamiliar or irregular shape in either metric or imperial units	Calculations on items of complex or composite shape, use scale drawings, convert between metric and imperial units

Table 1.2 shows the percentages of male and female cohort members who *failed* each of the tasks. Broadly the order of difficulty of the tasks corresponded to the BSA levels, though there was some overlap in terms of difficulty, especially between Foundation Level and Level 1. There were also large male-female differences for some for the tasks, particularly those involving measurement. For instance:

- nearly half the women could not work out the area of a room in square feet compared with a quarter of the men

- three quarters of the women could not work out the area of a 'pond liner' compared with just over half the men

- the most difficult task overall was working out the cash value of a 12½% service charge in a restaurant: three quarters of women and two thirds of men could not do it.

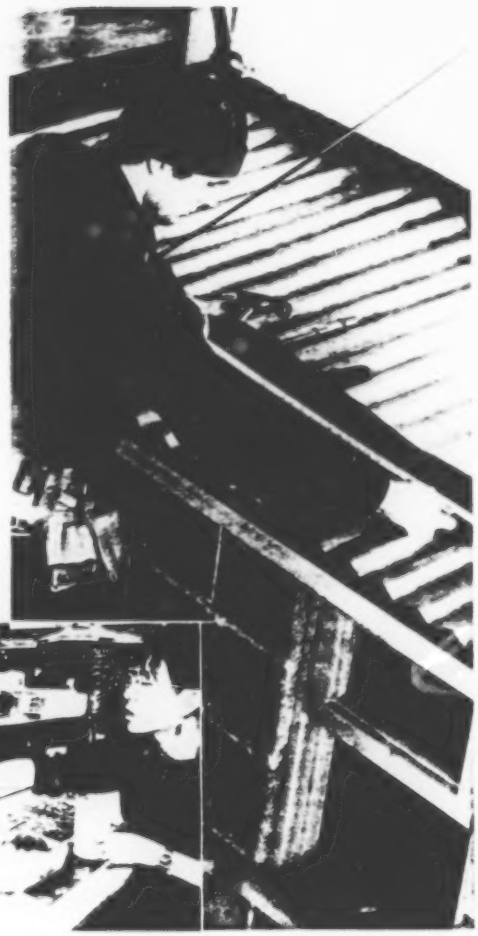


Table 1.2:
Per cent of Men and Women answering incorrectly on individual Numeracy Tasks

QUESTIONS	*Men*	*Women*
FOUNDATION LEVEL		
1. **Doing Shopping for a neighbour . . .**		
How much change should you give after shopping?	25%	27%
Performance criterion: % fail	25%	27%
2. **Planning a route for a job interview . . .**		
Which train should you catch to arrive at company in time?	22%	20%
What time will you arrive at the company?	33%	35%
Performance criterion: % fail	19%	18%
3. **Amount of Floor Space in a room . . .**		
Calculate area of a room in square feet	26%	46%
Performance criterion: % fail	26%	46%

BEST COPY AVAILABLE

QUESTIONS	*Men*	*Women*
LEVEL 1		
1. **Ordering a Pizza with friends . . .**		
What is the total cost?	10%	13%
How much does each person have to pay?	16%	19%
Performance criterion: % fail	16%	20%
2. **Digging a garden pond . . .**		
What is the area of pond liner required?	56%	73%
Performance criterion: % fail	56%	73%
3. **Information on Council Spending from a Chart . . .**		
What was the 1993 Education spending to the nearest £1 million?	24%	32%
What was the 1994 Fire department spending to nearest million?	20%	32%
Which department spent nearly £6 million in 1994?	5%	10%
Performance criterion: % fail	26%	38%
LEVEL 2		
1. **Two families go to a restaurant . . .**		
What is the total bill, including 12 ½% service charge?	65%	73%
Performance criterion: % fail	65%	73%
2. **Details of credit schemes to buy furniture on . . .**		
Which is the cheapest way of paying monthly?	14%	18%
Which is the cheapest way of paying overall?	16%	20%
And by how much cheaper is it overall?	34%	43%
Performance criterion: % fail	36%	45%
3. **How much do people spend on food, fuel, shelter . . .**		
What % of income spent on above if earned £10,000 per year	12%	16%
What % of income does someone in USA spend if earned £30,000 per year?	16%	22%
What relationship between earnings and cost of living does the graph show from 1993?	53%	58%
What is the % difference between the rise in earnings and the rise in the cost of living in 1994?	37%	50%
Performance criterion: % fail	29%	41%

A score of 1 was assigned to correct answers and the individual scores were aggregated to produce an overall numeracy and literacy score for each cohort member. The aggregate scores were then grouped into a four-fold classification of, for numeracy, 'very low' (23%), 'low' (26%), 'average' (25%) and 'good' (27%) and, for literacy, 'very low' (6%), 'low' (13%), 'average' (38%) and 'good' (57%), as shown in Table 1.3.

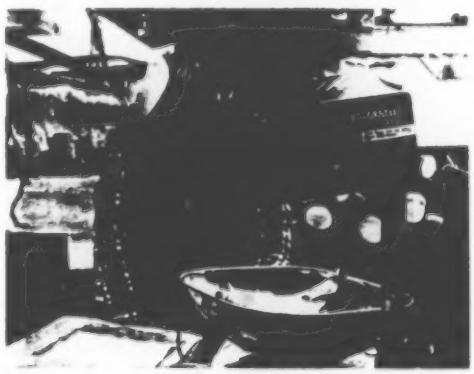


Table 1.3:
Literacy and Numeracy Ability Groups from Raw Scores

	4 Group Classification	All	Men	Women	2 Group Classification	All	Men	Women
		%	%	%		%	%	%
Literacy Skills	Very Low	6	5	7	Poor	19	16	22
	Low	13	11	16				
	Average	38	37	39	Competent	81	84	78
	Good	43	47	39				
	N(100%)=	*1711*	*799*	*912*	*N(100%)=*	*1711*	*799*	*912*
Numeracy Skills	Very Low	23	19	27	Poor	23	19	27
	Low	26	23	28				
	Average	25	24	25	Competent	77	81	73
	Good	27	34	21				
	N(100%)=	*1702*	*799*	*903*	*N(100%)=*	*1702*	*799*	*903*

- Just under one-quarter of the 37 year old respondents had 'very low' numeracy which would make everyday tasks difficult to complete successfully.

- In the order of four times as many cohort members were in the *very low numeracy* category compared with the *very low literacy* category: 27% vs 7% for women and 19% vs 5% for men.

- Only 9% of those with poor numeracy scores recognised or acknowledged their difficulty, in comparison with 19% of cohort members with poor literacy scores.

The aim of the analysis was to see to what extent numeracy problems were subsumed under literacy problems or constituted a significant problem in their own right. For this purpose we needed to identify people with *poor* numeracy and/or *poor* literacy for comparison with the others. For this purpose *'very low'* numeracy scores were used to define the *'poor'* numeracy group. Because of the relatively small numbers with very low literacy the *'poor'* literacy group was defined as people with *'very low'* or *'low'* literacy scores. Those cohort members with higher scores were defined as *"competent"* in numeracy and literacy respectively.

These new categories were then combined to form a fourfold typology reflecting the extremes of numeracy and literacy weakness and competence:

- poor numeracy + poor literacy
- poor numeracy + competent literacy
- competent numeracy + poor literacy
- competent numeracy + competent literacy.

Table 1.4:
Performance in Literacy & Numeracy Tests at Age 37

Skill Level	*Overall* %	*Men* %	*Women* %
1. **Poor** Numeracy + **Poor** Literacy	12	9	15
2. **Poor** Numeracy + **Competent** Literacy	11	9	12
3. **Competent** Numeracy + **Poor** Literacy	7	7	7
4. **Competent** Numeracy + **Competent** Literacy	70	75	67
Total N (100%)	*1701*	*798*	*903*

Table 1.4 places the great majority of cohort members, 70%, in the category of competent in *both* numeracy and literacy. This provides a baseline standard for comparison. Our interest is focused on the people who do not match this 'standard', particularly that minority of 18% of men and 27% of women whose numeracy is *poor*. We can then go on to ask whether, in combination with competent literacy, any disadvantageous effects of poor numeracy virtually disappear.

If poor literacy represents a bigger handicap than poor numeracy, we can rank the four categories as:

1. big problems (poor numeracy + poor literacy);
2. problems (competent numeracy + poor literacy);
3. small problems (poor numeracy + competent literacy);
4. no problems (competent numeracy + competent literacy).

As we shall see, this rank order fails to match expectations - especially in relation to difficulties in employment. We find that numeracy deficits appear to be a significantly bigger problem than literacy deficits. In other words, the rank order of the two middle categories in the typology is reversed when we look at the seriousness of the employment problems produced by poor basic skills.

In the report that follows, we compare the characteristics of cohort members in these four categories in different areas of life, focusing mainly on employment. We then examine some features of the background of people with poor functional numeracy.

BEST COPY AVAILABLE

Is Numeracy a Problem?

WE start our examination of the effects of numeracy problems by investigating the labour market participation of people in the four categories of the numeracy-literacy typology.

Do people with poor numeracy skills have difficulties in entering and holding on to employment and how does it affect their prospects when in jobs?

Employment Status

Figures 2.1a and 2.1b show the percentages of men who were in full-time employment, unemployed, sick, or other[1], and for women, those in full-time or part-time employment, 'at home', sick, or other at the time of the survey. Against expectation, the groups showing the lowest levels of full-time labour market participation among men and women were those with poor *numeracy* rather than poor literacy.

Although the vast majority of men were in full-time employment, those with poor numeracy were most prone to unemployment. A different picture was apparent for women. Of those women not in full-time work, those with poor *numeracy* tended to be in part-time jobs; those with poor literacy tended to be engaged in home-care.

1. For men, 'other' = part-time employment, home-care, education/training; for women 'other' = unemployment, education/training.

'Sickness' is defined as a temporary or permanent state – an absence of at least 6 months on a continuous basis from the labour market. 44 people were permanently sick. This group includes 5 men and 3 women who had never worked on a full-time basis. All others had a self-reported sickness which had taken them out of the labour market at some stage in their employment careers. Some of this illness may be masking actual unemployment.

Figure 2.1a:
Current Employment Status of Men at 37

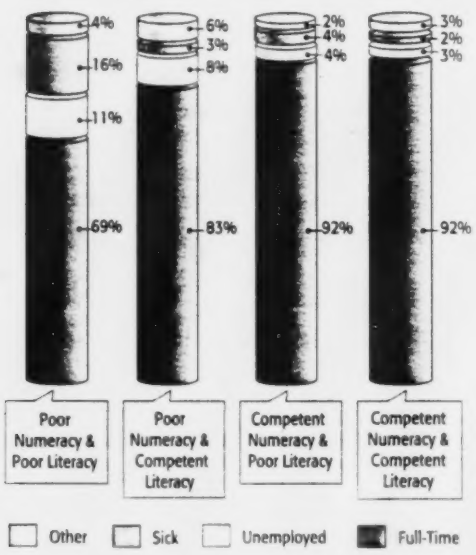
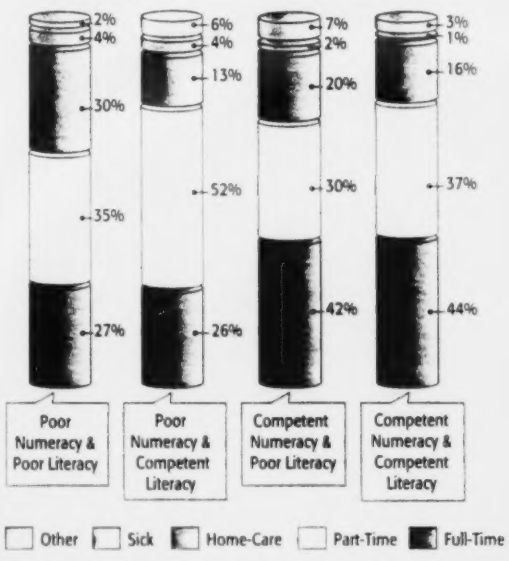


Figure 2.1b:
Current Employment Status of Women at 37



- 17% of men with poor numeracy + competent literacy were out of the full-time labour market – unemployed, sick, other – compared with 10% of those with competent numeracy + poor literacy. Of those with poor numeracy + poor literacy, 31% were not in full-time employment.

- 16% of men with poor numeracy + poor literacy were sick compared with no more than 4% of men in all other groups, ie. only in combination were poor numeracy and poor literacy skills connected with reported illness. Surprisingly, there was no effect of this kind for women.

- Only one in four (26%) of women with poor numeracy + poor literacy, or poor numeracy + competent literacy skills held a full-time job, compared with over two fifths (44%) of women with competent numeracy.

- 52% of women with poor numeracy + competent literacy were in part-time employment compared with 30% of those with competent numeracy + poor literacy.

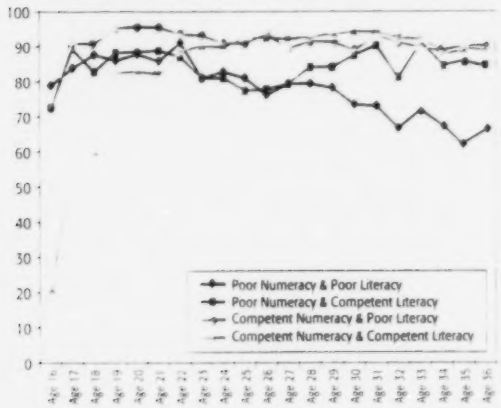
We see signs here of an unexpected significance attached to numeracy in holding onto jobs. More evidence for this comes from cohort members' employment histories. How does the picture change across working life since leaving school?

Figures 2.2a and 2.2b show, for men and women respectively, the percentages in full time employment for each of the four numeracy-literacy groups at each age from 16 to the time of their 37th birthday.

Notably for men, from 21 until the mid-20s (when most had finished full-time education) the full-time employment levels of the two groups – poor numeracy + poor literacy and poor numeracy + competent literacy – were virtually the same (Figure 2.2a) – some way below the level for the competent numeracy + poor literacy group. In other words poor numeracy appeared to represent a bigger problem for maintaining full-time employment than poor literacy.

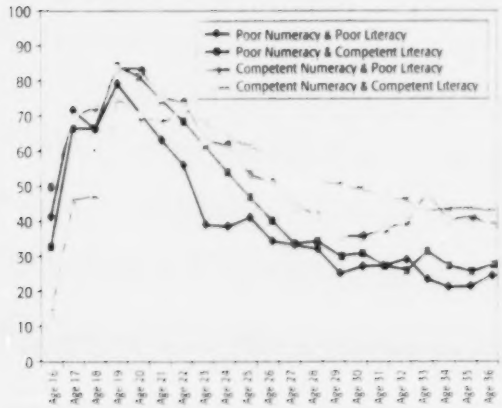
From age 26 onwards the paths of the two poor numeracy groups diverged, with the employment level of the poor numeracy + competent literacy group rising to levels just below those of men in the two competent numeracy groups. The proportion of men with the combination of poor numeracy and poor literacy skills in full-time work continued to decline. In other words, competent literacy skills appeared to take on more importance as men got older.

Figure 2.2a:
Percentage of Men in Full-Time Employment between Age 16-37



March 1974 March 1995

Figure 2.2b:
Percentage of Women in Full-Time Employment between Age 16-37



March 1974 March 1995

A rather different picture is apparent for women (Figure 2.2b), with more of a gradation across the four groups and numeracy retaining its importance. The convergence of the two groups containing people with numeracy problems did not occur until the mid-20's, and their low full-time employment levels were then maintained. Up until 25, only the group with poor numeracy + poor literacy had substantially lower levels of full-time employment, than the rest. From then on, those women in the poor numeracy + competent literacy category were leaving full-time employment in much larger numbers than those with competent numeracy + poor literacy and poor numeracy + competent literacy skills. By the time they had reached their late twenties they were barely distinguishable from those in the poor numeracy + poor literacy group.

The next highest full-time employment level was for those women showing competent numeracy + poor literacy. The highest level of all from age 23 was for those who were competent at both. This final group, like the others, exhibited the general female career pattern through the twenties of leaving full-time employment to care for home and family, often in combination with part-time jobs. For the women who were competent in basic skills the exit was delayed, or they retained full-time employment at a much higher level across the whole period.

BEST COPY AVAILABLE

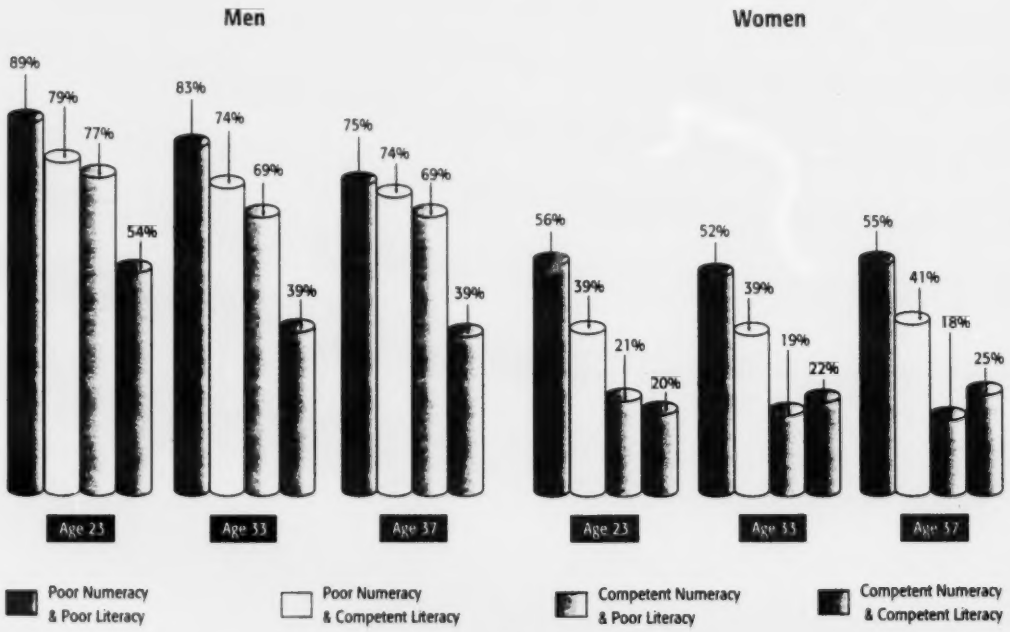
- Over 85% of men not engaged in extended education were in full-time employment from the age of 17, but by age 23 – the start of the 1980's recession – the percentage of the poor numeracy groups who were in full-time employment began to drop. Men with poor numeracy + poor literacy skills found it particularly difficult to recover from this, and under 70% held a full-time job from age 32.

- The peak level of full-time employment for women was around 80% at age 19. By age 29 less than 1/3 of those with poor numeracy + poor literacy and poor numeracy + competent literacy skills remained in full-time employment compared with over 40% of those with competent numeracy + poor literacy skills.

Occupation

Employment status tells us something about the way numeracy and literacy difficulties impact on employability, with poor numeracy apparently constituting the bigger problem. But we need to go further to find out what kinds of occupation were affected most. Figure 2.3 shows the proportions in the four groups who were in manual occupations at age 23, 33 and 37. As we might expect, those people in the poor numeracy + poor literacy group were most likely to be found in manual occupations. Among the men, at age 33 and 37 they were followed closely, not by men with poor literacy + competent numeracy, but again by men with competent literacy + poor numeracy. The group least likely to be in manual occupations were competent in both numeracy and literacy.

Figure 2.3:
Percentage in a Manual Occupation at Age 23, 33 and 37



This gradation was even more evident for women. Consistently, at age 23, 33 and 37, the women who had poor numeracy skills were most likely to be found in manual occupations. For those who were competent in numeracy – regardless of their literacy skills – the proportions in manual occupations were lowest.

The small numbers involved in this survey do not allow us to do any more detailed occupational analysis of the data for men. All we can say is that common occupations for men in the poor numeracy groups were: the building trades, warehouse work, plant and machine operative work and driving. Women were concentrated in a few personal service occupations such as waitressing, hairdressing or cleaning, clerical/secretarial and sales. We shall see typical examples of men and women in these occupations later.

- At age 33, 83% of men with poor numeracy + poor literacy and 74% of those with poor numeracy + competent literacy were in manual occupations compared with 69% of those with competent numeracy + poor literacy and 39% of those with competent numeracy + literacy.

- At age 33, 52% of women with poor numeracy + poor literacy and 39% of those with poor numeracy + competent literacy were in manual occupations compared with 20% of those who were competent in numeracy (regardless of their literacy skills).

- The most common occupations for men with poor numeracy skills were craft and related (27%) and plant/machine operators (27%). For women they were clerical/secretarial (25%) and personal service (27%). Although no men and barely any women with poor numeracy had professional occupations, 11% of men and 8% of women had management jobs.

Work-based training

One of the most significant effects of poor basic skills, demonstrated in earlier reports, has been the restriction they place on access to further education, and later, on work-based training (Bynner,1994). This is in large part due to the kinds of low grade, often part-time, work that people with poor basic skills gravitate towards. But when training is on offer in employment there is an added problem in taking advantage of it when proficiency in literacy and numeracy is poor. We explored whether difficulties with numeracy or difficulties with literacy have most effect on participation in training.

Figure 2.4a shows the percentages of men and women who had received any work-based training between the age of 16 and 23. Figure 2.4b shows the percentages between age 23 and 33. The differences between the numeracy and literacy groups demonstrate again the importance of poor numeracy in restricting access to job opportunities – this time within work itself. Over the period 16 to 23 (Figure 2.4a), as we might expect, the young men and women *least* likely to have ever had any work-based training were in the poor numeracy + poor literacy group. The next group to follow them was again the poor numeracy + competent literacy group. The groups *most* likely to have had any training were those with *competence* in *numeracy*.

Figure 2.4a:
Percentage of Men and Women with Work-Related Training Age 16-23

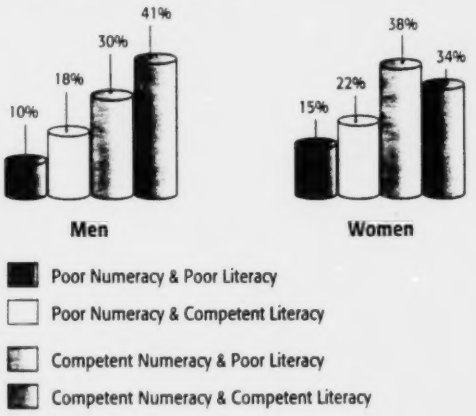
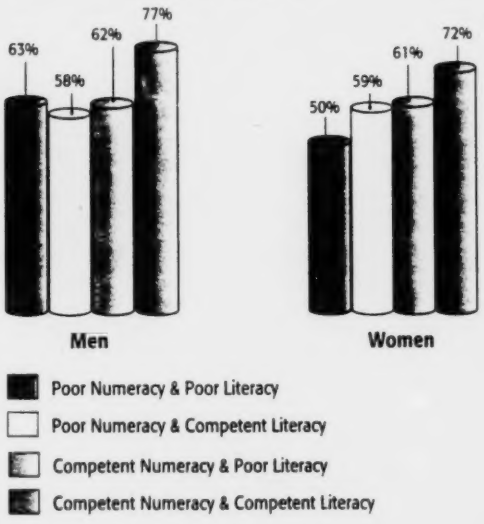


Figure 2.4b:
Percentage of Men and Women with Work-Related Training From Age 23



Over the period 23 to 33 (Figure 2.4b) the difference between the groups reduced. It appears that lack of training is related equally to poor numeracy and poor literacy. This suggests that it is in first and early employment that numeracy problems are particularly associated with lack of training.

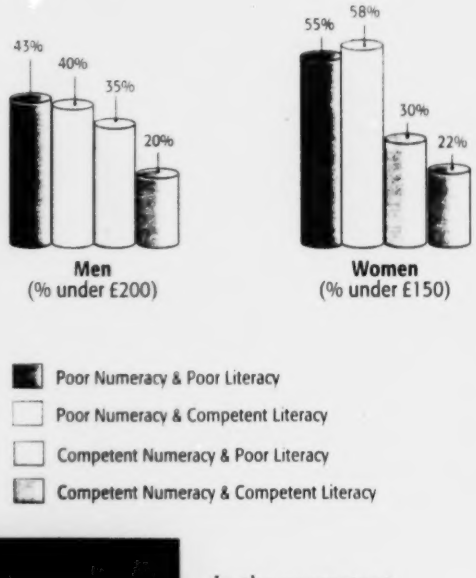
- Less than 20% of men or women with poor numeracy + poor literacy had received any work-based training between the ages of 16 and 23 compared with 35% of those who were competent in numeracy.

Income

One of the main feature of jobs that offer training is the prospect of improved income. As we might expect, at age 37 people with basic skills deficits had lower incomes than the others. Were numeracy or literacy problems most likely to be involved? To control the effects of extended education on earnings, we restrict comparisons to those in full-time employment who had left school at 16.

As Figure 2.5 shows, the pattern we have been seeing was repeated. The groups characterised by poor numeracy had the lowest incomes. At least 40% of the men in these poor numeracy groups earned less than £200 a week, and over 50% of the women earned less than £150 a week.

Figure 2.5:
Percentage of Men and Women Earning a Low Weekly Wage at Age 37 if left Full-Time Education at 16



In the competent numeracy groups the percentages in these low income categories, (£200 for men; £150 for women), dropped to around one in three for men and women with competent numeracy + poor literacy skills , and to just 1 in 5 of the men and women with competence in *both* numeracy and literacy.

Promotion

Another benefit of work-based training is the enhanced prospects it is likely to offer within a job. Here the picture changed again. Figure 2.6 shows that for women the groups with poor numeracy, or poor literacy, or both, were virtually indistinguishable so far as missing out on promotion was concerned. In contrast, for men, poor literacy appeared to be the more important factor. Men in the groups with poor literacy – regardless of whether they also had poor numeracy skills – were *less* likely to have been promoted.

- Three fifths of women with poor numeracy *or* poor literacy had never been promoted, compared with half of those who were competent in both numeracy and literacy.

- Approaching three fifths of men with poor literacy had never been promoted, compared with under two fifths of those in the competent literacy groups.

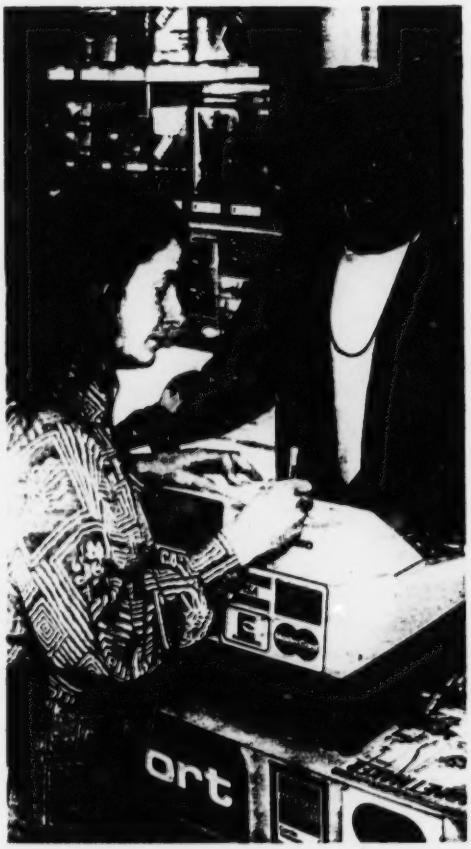
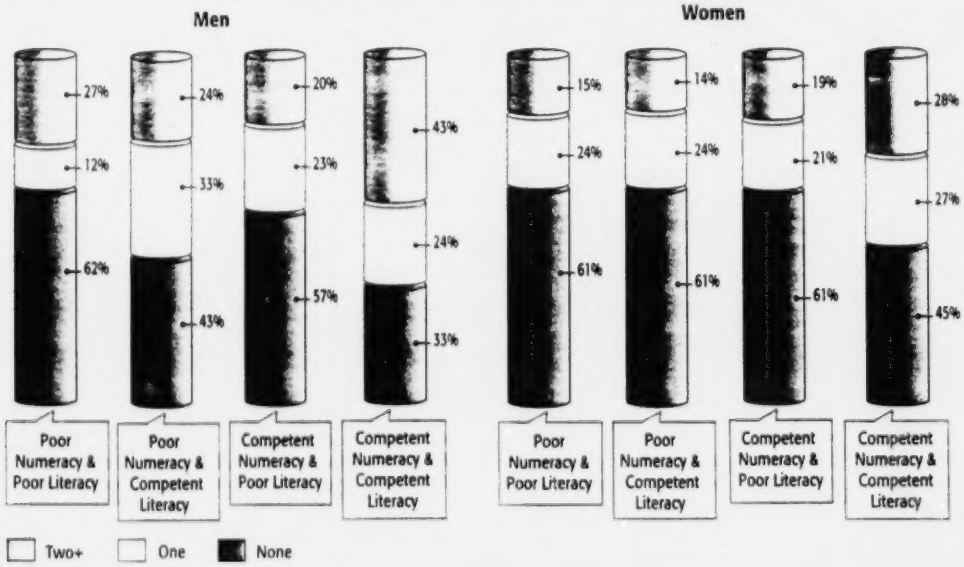


Figure 2.6:
Number of Promotions Received by Men and Women Between Age 23 and 37



BEST COPY AVAILABLE

There were differences between men and women in the number of times they had been promoted. Among women, numeracy skills appeared to be marginally more related to the number of promotions than were literacy skills. Among men literacy skills appeared again to be the more important factor.

- People who had been promoted once tended to have been promoted again. One in four women with competent numeracy + competent literacy had been promoted twice or more, compared with one in six of those with poor numeracy.

- Over two fifths of men with competent numeracy + literacy had been promoted two or more times. This compared with one in five of those with competent numeracy + poor literacy, and one in four of those with competent literacy + poor numeracy.

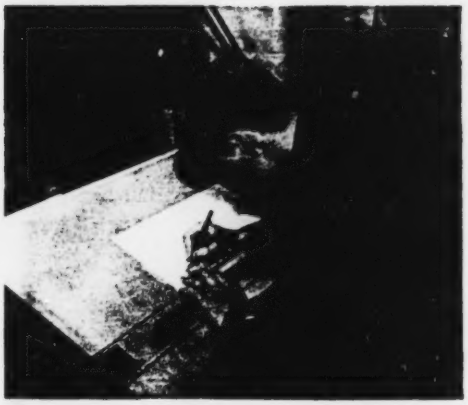
Other Problems?

Basic skills problems have an impact on other areas of life besides employment. They are associated with disadvantaged home circumstances and in certain respects an impoverished lifestyle, often reflected in higher than average levels of depression, especially among women. (Ekinsmyth and Bynner, 1996). There was no clear pattern of differences in these characteristics associated with poor numeracy rather than poor literacy. The cohort members' problems seemed to be rooted as much in general disadvantage experienced in family background, education and the labour market as in poor basic skills particularly. If anything, poor literacy, because of its significance in educational failure, seemed to be the more important factor.

Summary

We might expect the minority of people with poor basic skills to be pushed into the kinds of jobs with least security and the poorest prospects. The majority of female cohort members were not in full-time employment by age 37. More surprising was the significance of numeracy rather than literacy in these poor labour market positions. Both men and women lacking numeracy skills, compared with those lacking literacy skills, were more likely in their early careers to have been out of the labour market. They were more likely to be engaged in low grade work, in unskilled manual jobs without training and with low pay. Only for promotion were there signs of a more important role for literacy, but this was restricted to men.

It would be wrong of course to conclude that everybody with a numeracy problem is going to have employment difficulties. In



Britain's unregulated labour market, perhaps more than most others, when the economy is booming there are numerous employment opportunities where limited basic skills do not stand in the way of entry or advancement. What we can conclude more confidently is that those with numeracy problems are going to feel the squeeze most when the economy contracts. And as the nature of employment changes, these are the workers who are going to have to struggle hardest to obtain and hold on to jobs, and to advance their positions in them.

People with numeracy problems

We complete this account of the characteristics associated with numeracy difficulties with a few examples of profiles of cohort members in our poor numeracy groups. These are, of course, illustrative. It is not possible to determine precise cause and effect. For confidentiality reasons they have all been given fictional names.

'JUNE':

Poor numeracy-competent literacy skills

June exemplifies the problem associated with poor numeracy of low pay. She has been working as a part-time Health Care Assistant since 1991. She has been promoted once and has received work-related training from both her current and an early employer. At age 33, at the start of her employment, June's weekly salary was, £58. June left school at age 16, with four C.S.E. passes. June got married before age 21 and has two children, her first child not until after she was 25.

'MARY':

Poor numeracy-poor literacy skills

Mary has got a good job almost in spite of her numeracy difficulties – exemplifying the kind of employee who through good interpersonal skills rises to a management position while not having the skills the role strictly demands. She has been the Manageress of an Off-Licence since 1985. Mary has been promoted once but has never received any work-related training. At age 23 she was in full-time employment, earning £55 per week. At age 33 she worked part-time, earning £80 each week. Mary left school at 16 with no formal qualifications. She was married by age 21, has 3 children, her first when age 25.

'SUSAN':

Poor numeracy-competent literacy skills

Susan is in an occupation where her poor numeracy skills appear to have given her difficulties in holding on to the kind of job she wants or getting promotion in one. She has been working part-time as a shop assistant since 1994. She had been in a full-time sales position for three years prior to this, but was made redundant. At age 33, when also in a part-time position, Susan earned £72 per week. In total, she has spent over 8 years working part-time. She has not been promoted and has never received work-related training. Susan left school at 16 with no qualifications. She is married with one child, which she had before she was 18.

'CLAIRE':

Poor numeracy-poor literacy skills

As an unskilled factory worker, Claire's job typifies the kind of work available to women with poor numeracy skills. Although the pay is good, as new production methods are adopted, her job security is likely to be poor, as are her prospects of getting a new job. She works full-time in a food factory as a Process Worker. She received no work-related training between age 16-23, but has been on four one-day courses from her current employer. Claire has worked in the factory since 1987. She has been promoted once during this time, and at age 33 received £248 per week. She was married by age 23, and has two children – her first before she was 20. She has spent 4½ years in a full-time home-care role, and over 6 in part-time work. She left school before she was 16, and has no qualifications.

BEST COPY AVAILABLE

'BOB':

Poor numeracy-competent literacy skills

Bob's job is typical of the kind that used to be filled by ex-soldiers – that range of security and caretaking work that relies, at least at present, on 'brawn more than brain'. He is currently working full-time as a security guard, but has had many periods of unemployment. This is Bob's third job since 1990. Since entering the work-force at 16, he has spent more than 17 years unemployed. He has never been promoted or attended a training course. He left school before he was 16 and has no qualifications.

'ANDREW':

Poor numeracy-competent literacy skills

Andrew works in another common area of unskilled employment where men with poor numeracy are frequently to be found – Plant Operative. He has been employed on a full-time basis by the same firm since he was 21. Andrew has been promoted once during this time and has never received any training. He has never been unemployed. At age 33 Andrew earned £135 per week. Andrew left school at age 16 with two poor C.S.E. qualifications, and had spent some time in care during his childhood. Andrew married at 25 and has two children.

'JAMES':

Poor numeracy-poor literacy skills

James relies on another skill which men typically offer to get employment, driving – in his case he couples it with self-employment. He has been a self employed Taxi-driver since 1985. He left school at age 16 with five C.S.E. passes, and has been unemployed for approximately 4 years since this time. He has never had any work-related training. James became a father at age 17, and married when 20. He currently has two children.

'DAVID':

Poor numeracy-poor literacy skills

David exemplifies the large part of the male workforce in casual employment in the building industry, where lack of numeracy skills is a problem – but not sufficient to close off all possibilities of a job. He was made redundant in 1991, from which time he has been unemployed. He is a bricklayer, who throughout his working life has had frequent periods of unemployment. He received some training early on in his career, but none since he was 23. He left school when he was 16, and obtained 7 C.S.E. passes. David has 4 children.

Where does the problem come from?

PREVIOUS analysis of the characteristics associated with poor basic skills suggests that, if anything, disadvantaged home circumstances, coupled with lack of parental interest and involvement in their children's education, constitute an even bigger threat to the development of numeracy skills than to the development of literacy skills (Bynner and Steedman, 1996). Early on in school there is little to distinguish general educational underachievement from that associated with literacy and numeracy, but by age 11 differentiation begins to occur. Thus Maths tests scores correctly identify the people who later on will have the poorest numeracy scores as adults, and similarly reading tests correctly identify those who, as adults, have the poorest literacy scores.

School performance

Tables 3.1a and 3.1b show something of these relationships. First they compare at age 7, 11 and 16, mean (average) *mathematics* test scores across the four numeracy and literacy groups for men and women separately. Then they compare mean (average) *reading* scores (sd = standard deviation of scores).

The tables show the expected upward trend in the figures as we move from poor to competent groups. Mathematics test scores differentiate best between the groups defined by poor and competent adult *numeracy* scores and the reading tests differentiate best between the

Table 3.1a:
Average Test Scores Attained in Maths at Age 7, 11 & 16

		Age 7			*Age 11*			*Age 16*		
		Mean	*sd*	*N*	*Mean*	*sd*	*N*	*Mean*	*sd*	*N*
Poor Numeracy + **Poor** Literacy	m	**3.4**	2.3	*63*	**1.8**	6.7	*58*	**2.1**	3.7	*53*
	f	**3.8**	2.3	*114*	**2.0**	6.7	*58*	**2.3**	4.4	*93*
Poor Numeracy + **Competent** Literacy	m	**4.5**	2.4	*64*	**2.4**	7.7	*62*	**3.3**	5.6	*54*
	f	**4.5**	2.4	*92*	**2.7**	6.6	*91*	**2.8**	3.8	*84*
Competent Numeracy + **Poor** Literacy	m	**4.4**	2.4	*49*	**3.0**	9.1	*40*	**3.7**	5.1	*38*
	f	**4.9**	2.5	*56*	**4.0**	8.0	*46*	**3.7**	5.1	*43*
Competent Numeracy + **Competent** Literacy	m	**5.9**	2.3	*530*	**5.1**	9.7	*525*	**5.3**	6.6	*452*
	f	**5.7**	2.3	*541*	**5.2**	9.1	*521*	**4.9**	6.3	*480*
Maximum Score		*10*			*10*			*10*		

Table 3.1b:
Average Test Scores Attained in Reading at Age 7, 11 & 16

		Age 7			*Age 11*			*Age 16*		
		Mean	*sd*	*N*	*Mean*	*sd*	*N*	*Mean*	*sd*	*N*
Poor Numeracy + **Poor** Literacy	m	5.3	8.5	*63*	3.1	5.6	*58*	4.9	8.4	*53*
	f	6.6	7.8	*115*	3.4	4.9	*109*	5.3	7.1	*95*
Poor Numeracy + **Competent** Literacy	m	7.2	7.2	*64*	3.9	5.8	*62*	6.9	5.9	*54*
	f	7.6	7.2	*92*	4.2	4.6	*91*	6.9	5.2	*86*
Competent Numeracy + **Poor** Literacy	m	6.4	7.5	*49*	3.8	5.2	*40*	6.5	6.6	*38*
	f	8.0	6.7	*36*	4.5	4.9	*46*	7.0	5.4	*43*
Competent Numeracy + **Competent** Literacy	m	8.1	6.1	*535*	5.2	5.8	*525*	8.1	5.4	*453*
	f	8.8	4.8	*544*	5.4	5.2	*521*	8.1	4.4	*460*
Maximum Score		*10*			*10*			*10*		

groups defined by poor and competent adult *literacy* scores. Less expectedly, the tables also show how closely involved both mathematics skills *and* reading skills are in the later adult difficulties. Thus adults with poor numeracy showed weaker performance in both mathematics *and* reading when they were younger and similarly adults with poor literacy showed weaker school performance in reading and mathematics.

The predictive power of the tests in identifying later adult numeracy and literacy problems was less evident in the monitoring of children's skill development undertaken by teachers. (Figures 3.1a and 3.1b). Teachers seemed to have only limited success in spotting the pupils who would subsequently end up as adults with poor basic skills – especially poor numeracy skills.

Figure 3.1a:
Mathematic Ability – Percent rated with Little Mathematic Ability by their Teacher at Age 7, 11 and 16

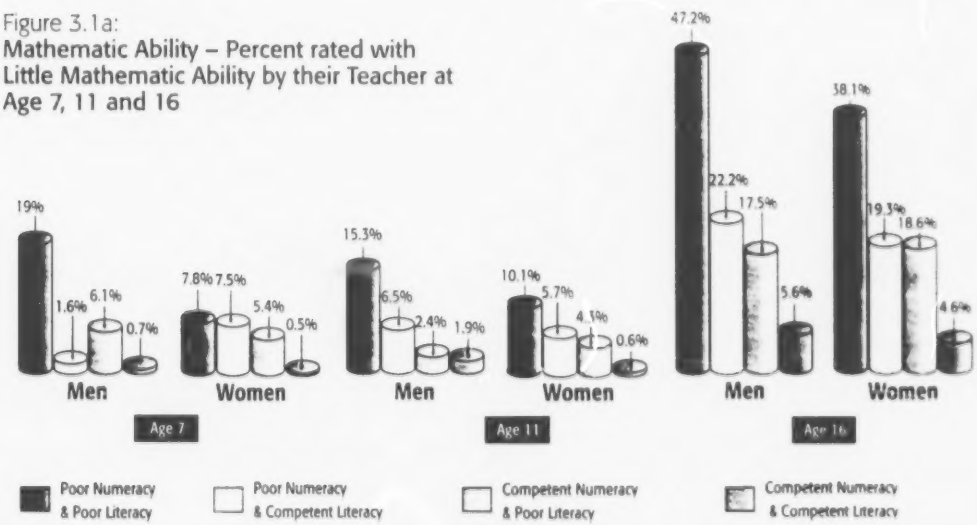
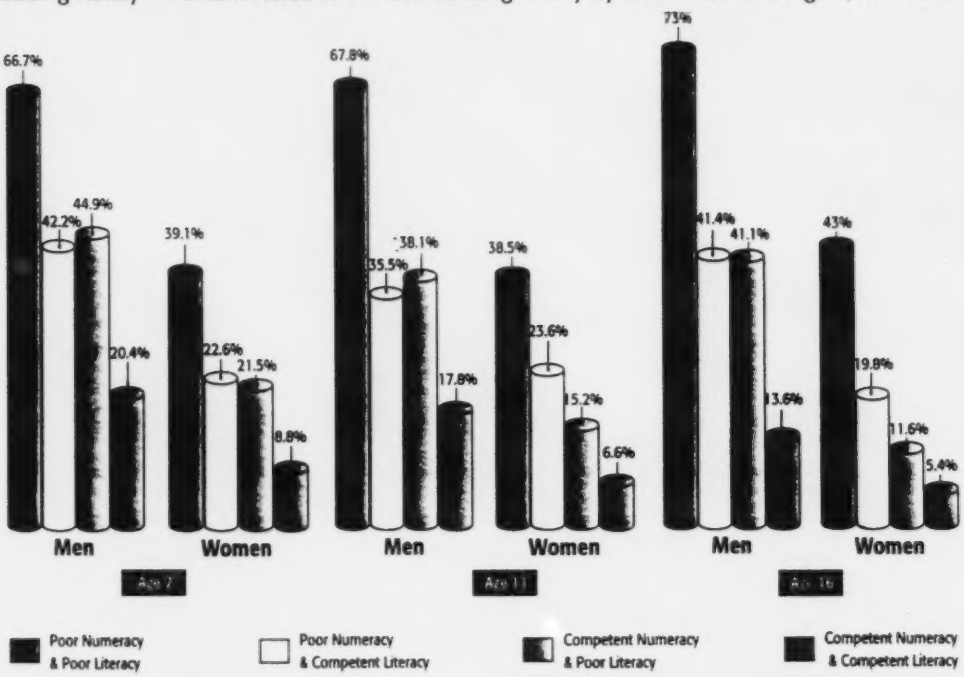


Figure 3.1b:
Reading Ability – Percent Rated with Poor Reading Ability by their Teacher at Age 7, 11 and 16



- At age 7 and 11, less than one fifth of men and less than one tenth of women who lacked numeracy *and* literacy abilities as adults were correctly identified as poor at maths by teachers. At age 7, an even tinier proportion – 2% – who, as adults, were poor at numeracy, but competent in literacy had been identified.

- Even at 16 ,where the predictions greatly improved, well over half those who were, as adults, in the poor numeracy groups were *not* correctly identified as poor at mathematics by teachers.

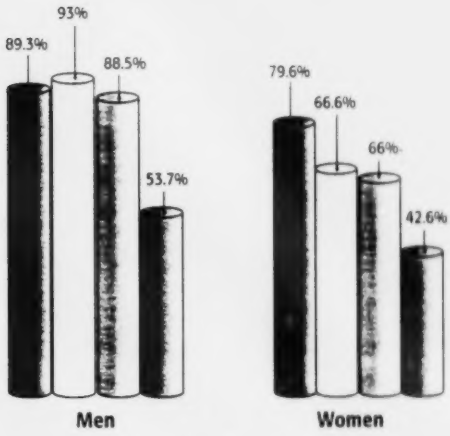
Future adult reading problems appeared to be more easily identified by teachers. This was probably as much to do with ideas on the part of teachers about the child's general educational underachievement as with weaknesses in a specific skill.

- Two thirds of adults with poor numeracy + poor literacy were correctly identified as being poor at reading by teachers at age 7. Two fifths of the groups, who as adults, were classified as poor at numeracy but competent at literacy were also classified as poor readers.

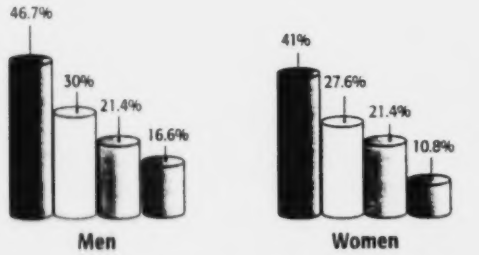
Early leaving and qualifications

The culmination of poor educational attainment is early exit from the education system with minimal qualifications. To what extent is poor numeracy rather than poor literacy implicated in these outcomes? Figure 3.2 compares the four numeracy and literacy groups. First it shows the numbers leaving education at the minimum age of 16. Then it shows those leaving without qualifications. It is notable that for men

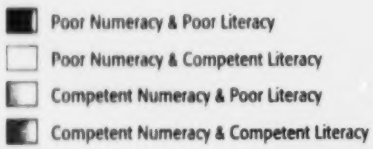
Figure 3.2:
Percentage Leaving Full-Time Education at Age 16, and the percentage who left at Age 16 without attaining any Formal Qualification



Percentage who left Education by Age 16



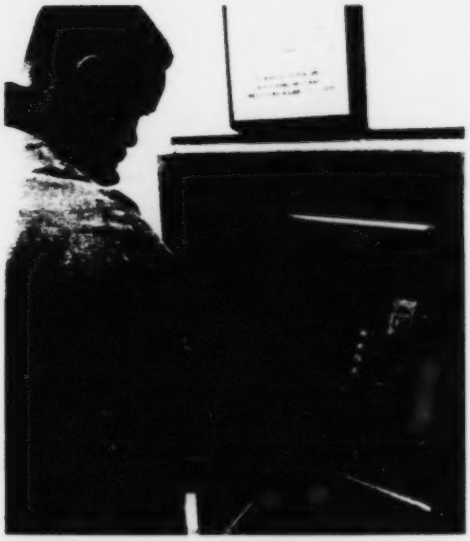
Percentage who left at 16 with no Qualifications


Poor Numeracy & Poor Literacy
Poor Numeracy & Competent Literacy
Competent Numeracy & Poor Literacy
Competent Numeracy & Competent Literacy

weaknesses in either numeracy *or* literacy seemed to have precipitated early leaving. For women, the combination of problems with numeracy and literacy seemed to prompt the early exit.

This may well be because girls with poor educational attainment were still likely to want to stay on in education to get the secretarial and clerical qualifications which would get them a 'white collar' job. It is only when their educational attainment is exceptionally poor – ie they lack both numeracy and literacy skills – that they feel impelled to leave. This is also reflected in the qualifications obtained. Fewer women than men had left education without any qualifications, even in the group with poor numeracy and poor literacy combined.

Interestingly too, poor numeracy rather than poor literacy among both men and women was more likely to be coupled with leaving school without qualifications.



However, in relation to qualifications ever achieved among men poor *numeracy* appeared to be the major factor in absence of qualifications as seen in Table 3.2. Among women, poor literacy *and* poor numeracy appeared to be equally involved. In other words, although poor numeracy appears to be central to both boys' and girls' educational difficulties, later on it remains a distinctive educational problem in getting qualifications mainly for men. Again this may be because men were drawn to scientific and technological education and training courses with a strong numeracy component. Women's educational interests typically, at the time of the survey, lay more in the humanities, business studies and office skills, where numeracy is given less prominence.

- Nine tenths of men in the three numeracy-literacy problem groups had left school at 16 compared with half of those who were competent in numeracy and literacy.

- Four fifths of women in the poor numeracy + poor literacy group had left school at 16. This compared with two thirds of those with either poor numeracy *or* poor literacy, and two fifths of those who were competent in both numeracy *and* literacy.

- Approaching one in three of men in the poor numeracy + competent literacy groups had never gained any educational qualifications. This compared with one in six of those with competent numeracy + poor literacy. Among women, one in five of both these groups had never gained any qualifications.

Table 3.2:
Highest Qualification at Age 33

	Poor Numeracy Poor Literacy		*Poor Numeracy & Competent Literacy*		*Competent Numeracy Poor Literacy*		*Competent Numeracy Competent Literacy*	
	Men	*Women*	*Men*	*Women*	*Men*	*Women*	*Men*	*Women*
None	50%	39%	30%	17%	14%	20%	7%	6%
Some (NVQ1)	18%	19%	16%	19%	20%	18%	9%	8%
O-Level (NVQ2)	27%	36%	39%	50%	35%	44%	30%	41%
A-Level or above (NVQ3 – NVQ5)	6%	6%	14%	14%	32%	18%	55%	44%
N (100%)	***68***	***118***	***69***	***99***	***51***	***55***	***561***	***581***

BEST COPY AVAILABLE

Numeracy Matters

WE started this report by raising the question whether poor numeracy was an important issue for adults, compared with poor literacy. The survey gives striking evidence that numeracy *does* matter. People without numeracy skills suffered worse disadvantage in employment than those with poor literacy skills alone. They left school early, frequently without qualifications, and had more difficulty in getting and maintaining full-time employment. The jobs entered were generally low grade with limited training opportunities and poor pay and prospects. Women with numeracy difficulties appeared especially vulnerable to exclusion from the clerical and sales jobs to which they aspired. Men's problems were less clearly differentiated between occupations.

The numeracy problem begins early in disadvantaged family circumstances which carry over into problems in keeping up at school. Teachers had very limited success in identifying incipient numeracy problems. Large numbers of children, who later, as adults, had numeracy problems, did not have their problems recognised while they were at school. It was more likely that problems with literacy were recognised. However, large numbers of children were still falling through the net.

In the modern state few people can escape using literacy skills, so there is a continual challenge to maintain and improve them. This is less the case for numeracy. Located in jobs where they are not under pressure to exercise numeracy skills, and probably

avoiding situations in every day life where such skills might be needed, people with poor numeracy may find their skills deteriorate even further. This may account for part of the gap between teachers' perceptions of numeracy problems at school and lack of competence in adulthood as revealed by test scores.

Whether or not the gap can be accounted for in these terms, there is clearly a need to improve the skills of teachers (and parents) in monitoring children's educational progress and taking the appropriate remedial action when difficulties with the basic skills begin to emerge. Such monitoring is clearly necessary through primary school, but is also important over the crucial period from 13 onwards when young people are beginning to form their ideas about possible jobs. In adult life, the need for remedial teaching for those with poor numeracy gains added impetus from this research.

One feature of the modern labour market is the relentless decline in unskilled and partly skilled occupations. Our case studies showed that people with poor numeracy were in exactly these kind of jobs. As the number of such occupations declines further, then the people in them face increasing risk of unemployment. To improve their opportunities to get the kinds of jobs that are available, their numeracy skills have to be enhanced. This makes the case for viewing numeracy as just as important a target for educational intervention with adults as literacy.

Finally, one of the more surprising findings from this survey was the significance of numeracy in women's working lives. There has sometimes been an assumption that

women do not care about developing numeracy skills, because the kinds of jobs they seek do not require them. It has also been thought that in domestic situations, as part of the division of roles, they rely on husbands or partners to apply these kinds of skills when the family requires them. This was probably always a false picture in the sense that, no doubt, women have always needed to be proficient in numeracy. Yet the fact remains that the women in this survey tend to have less competence in certain kinds of numeracy than the men. The most recent information on performance in schools suggests that, in the future this may not be such a problem. For the present, in view of growing demand by employers for numeracy skills in the kinds of jobs that women seek, there is a strong case for a concerted educational campaign to raise the levels of women's numeracy skills.

Appendix

SHOPPING FOR A NEIGHBOUR

INSTRUCTION TO INTERVIEWER

GIVE THE INTERVIEWEE CARD I. ASK THE QUESTION FAIRLY SLOWLY AND REPEAT IT IF NECESSARY. THE INTERVIEWEE MAY NOT USE A CALCULATOR FOR THIS QUESTION.

INTRODUCTORY SCRIPT

The next part is to find out how happy you are using numbers in a variety of different situations. The first one is about money. I am going to ask you a question and then I want you to tell me the answer.

We are neighbours, you have offered to do some shopping for me. People sometimes make mistakes when handling money. The price of the items is on the card.

Q1 **You have brought me a loaf of bread and two tins of soup. If I give you £2 how much change should you give me?**

Assessment guidelines

	Correct	Incorrect	NA
Answer 1 42p given	☐ 1	☐ 2	☐ 3 (70)

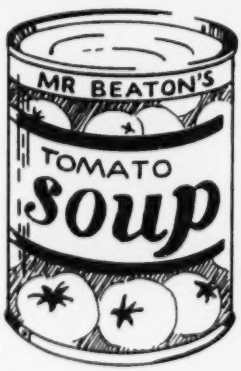
Performance criterion: Item correct.	YES	NO	
	☐ 1	☐ 2	(71)

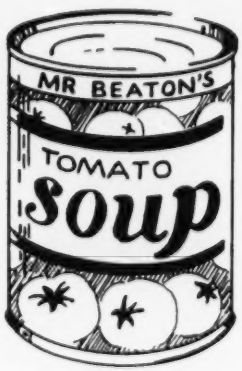
SHOPPING FOR A NEIGHBOUR

a loaf of bread

68p each

two tins of soup





45p each

PLANNING A ROUTE FOR A JOB INTERVIEW

INSTRUCTION TO INTERVIEWER

GIVE THE INTERVIEWEE CARD J. READ OUT THE QUESTIONS SLOWLY. MAKE SURE THEY HAVE A PENCIL AND PAPER.

INTRODUCTORY SCRIPT

The next question is about planning a route to a job interview in Almsford and working out how long it will take to get there.

You will need to work out which train to take for a job interview in Almsford at 11.30. However, you want to arrive early, at 11.15 and there is a ten minute walk from the station to the company's offices. Look at the timetable in this Card (J) to answer the following questions. You will take the train from Newgate Station.

Q1 Work out which train you need so that you arrive at the company by 11.15

Q2 What time will you arrive at the company?

Assessment guidelines

		Correct	Incorrect	NA
Answer 1	Selects the 10.32 train from Newgate	☐ 1	☐ 2	☐ 3 (77)
Answer 2	Calculate arrival time as 11.05	☐ 1	☐ 2	☐ 3 (78)

Performance criterion: One or more answers correct.	YES	NO	
	☐ 1	☐ 2	(79)

PLANNING A ROUTE FOR A JOB INTERVIEW

Hazledene & Co.

The Dene, Almsford, Hampshire.

Interview Details:

Interview time: 11.30

Please arrive by: 11.15

Hazledene & Co are a 10 minute walk from Almsford Railway Station.

British Rail ⇄ Timetable

Morton to Turnerstone — **Mon-Fri**

Morton	10.17	10.37	10.57	11.17
Graves End	10.21	10.41	11.01	11.21
Newgate	10.32	10.52	11.12	11.32
Appleby	10.40	11.00	11.20	11.40
Meadstone	10.49	11.09	11.29	11.49
Almsford	10.55	11.15	11.35	11.55
Turnerstone	11.01	11.21	11.41	12.01

Turnerstone to Morton — **Mon-Fri**

Turnerstone	12.24	12.59	13.34	13.59
Almsford	12.30	13.05	13.40	14.05
Meadstone	12.36	13.11	13.46	14.11
Appleby	12.45	13.20	13.55	14.20
Newgate	12.53	13.28	14.03	14.28
Graves End	13.04	13.39	14.14	14.39
Morton	13.08	13.43	14.18	14.43

THE AMOUNT OF FLOOR SPACE IN A ROOM

INSTRUCTION TO INTERVIEWER

GIVE THE INTERVIEWEE CARD K. READ THE QUESTIONS SLOWLY. THE INTERVIEWEE MAY USE A CALCULATOR - RECORD WHETHER THEY DO USE A CALCULATOR IN THE BOXES BELOW.

INTRODUCTORY SCRIPT

This question asks you to calculate the area of a room. Here is a diagram of the room with the measurements. Please calculate the floor area of the room. You may use a calculator from now on.

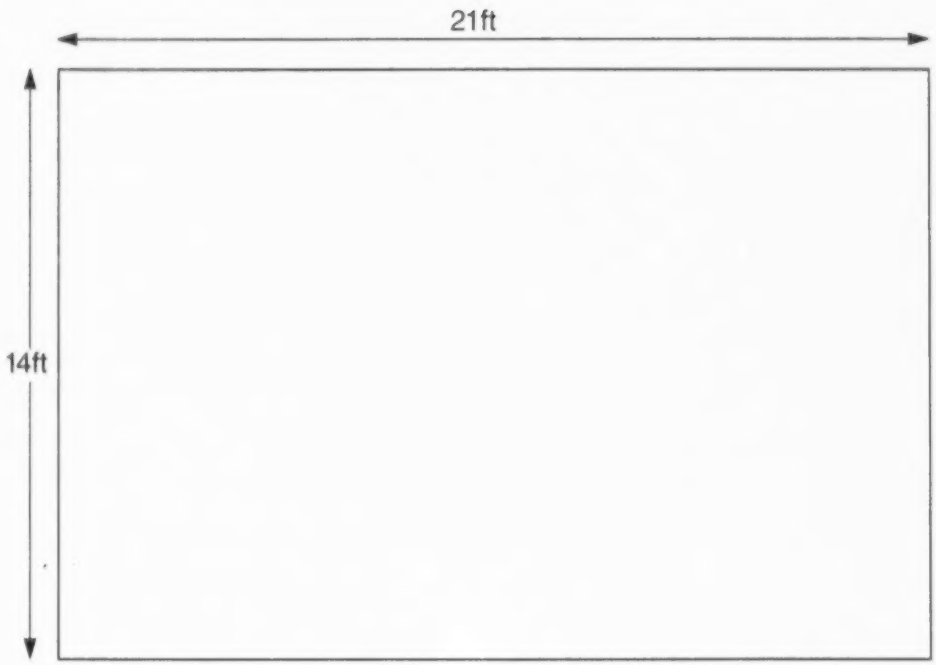
Assessment guidelines

	Correct	Incorrect	NA	
294 Square feet	☐ 1	☐ 2	☐ 3	(75)

Performance criterion: Right answer.	YES ☐ 1	NO ☐ 2	(76)
Calculation correct but ommitted 'square feet'	YES ☐ 1	NO ☐ 2	(77)
Used Calculator	YES ☐ 1	NO ☐ 2	(78)

THE AMOUNT OF WORK SPACE IN A ROOM

Diagram of the floor space in a room:



ASSESSMENT TASK 13 **LEVEL 1**

AN EVENING WITH FRIENDS

INSTRUCTION TO INTERVIEWER

GIVE THE INTERVIEWEE CARD L. READ THE QUESTIONS SLOWLY.

INTRODUCTORY SCRIPT

Now I would like you to imagine that you and some friends are going to watch some videos.

The whole group decides to order some take-away pizza while watching the videos. There will be six of you in total and you have decided to split the costs equally between you.

Two videos were hired for the evening. Each video costs £2.50 for the evening. The pizza costs £19.66 in total for all six people.

Q1 What is the total cost?

Q2 Work out exactly how much each person has to pay?

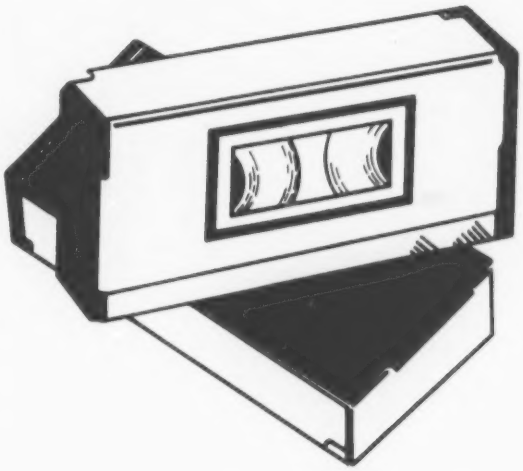
Assessment guidelines

		Correct	Incorrect	NA
Answer 1	Calculates total as £24.66	☐ 1	☐ 2	☐ 1 (00)
Answer 2	Calculates total per person as £4.11 (N.B. need exact answer)	☐ 1	☐ 2	☐ 1 (00)

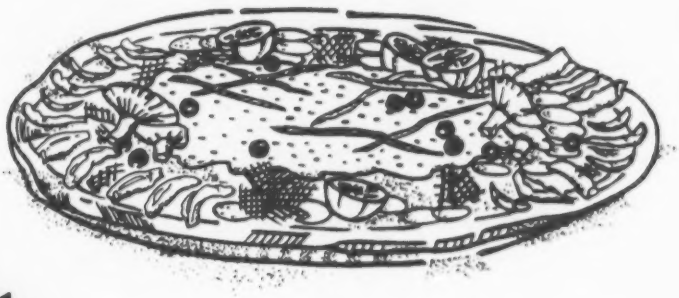
	YES	NO
Performance criterion: Both correct	☐ 1	☐ 2 (0)
Used Calculator	☐ 1	☐ 2 (0)

CARD L ASSESSMENT 13

AN EVENING WITH FRIENDS



2 Videos
£2.50
each



Take-away
Pizza
£19.66

POND LINER

INSTRUCTION TO INTERVIEWER

GIVE THE INTERVIEWEE CARD M. READ THE QUESTIONS SLOWLY.

INTRODUCTORY SCRIPT

This time I want you to imagine you are going to dig a pond in a garden. You need to work out the area of the pond liner required. On this sheet there is a diagram of the pond.

The sheet also gives a gardening magazine's instructions for working out the amount of liner required. Work out the amount of liner you will need for this pond.

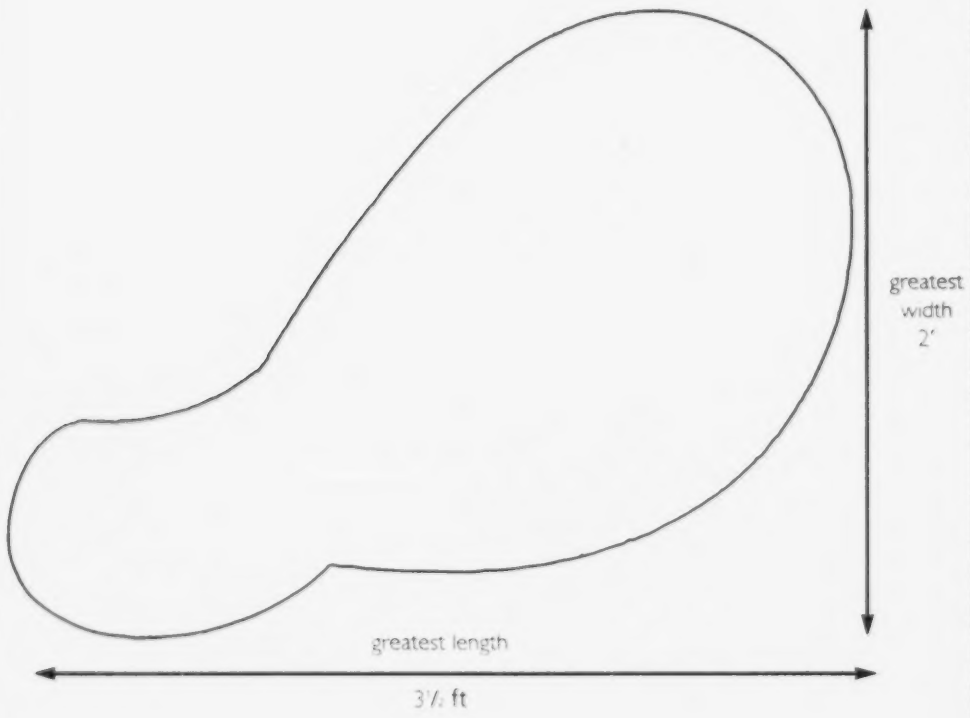
Assume that your pond is going to be two feet deep. Please go ahead and calculate the area of the pond liner you need.

Assessment guidelines

	Correct	Incorrect	NA	
45 Square feet	☐ 1	☐ 2	☐ 3	(14)
Performance criterion: Right answer.	**YES** ☐ 1	**NO** ☐ 2		(15)
Calculation correct by omitted 'square feet'	**YES** ☐ 1	**NO** ☐ 2		(16)
Used Calculator	**YES** ☐ 1	**NO** ☐ 2		(17)

WORKING OUT THE AMOUNT OF POND LINER REQUIRED

1. The pond is 2ft deep



2. (a) To the greatest width add 2ft plus the depth of the pond.

   (b) To the greatest length add 2ft plus the depth of the pond.

3. Use (a) and (b) to calculate the area of the liner required.

COUNCIL SPENDING

INSTRUCTION TO INTERVIEWER

GIVE THE INTERVIEWEE CARD N. READ THE QUESTIONS SLOWLY.

INTRODUCTORY SCRIPT

This is about extracting information about council spending from a chart.

Q1 **What was the 1993 Education spending, to the nearest million pounds?**

Q2 **What was the 1994 Fire department spending, to the nearest million pounds?**

Q3 **Which department spent nearly £6 million in 1994?**

Assessment guidelines

		Correct	Incorrect	NA
Answer 1	£24m to the nearest £million N.B. – incorrect if gives exact answers	☐ 1	☐ 2	☐ 3
Answer 2	£2m to the nearest £million N.B. – incorrect if gives exact answers	☐ 1	☐ 2	☐ 3
Answer 3	Housing	☐ 1	☐ 2	☐ 3

Performance criterion: Three items correct	YES	NO
	☐ 1	☐ 2

CARD N — ASSESSMENT 15

CITY COUNCIL SPENDING 1993 AND 1994 (£ MILLION)

DEPARTMENT	1993 (£m)	1994 (£m)
EDUCATION	23.73	24.28
HOUSING	6.24	5.96
CLEANSING	2.16	2.87
FIRE	1.99	2.31
POLICE	8.80	10.34
AMBULANCE	2.85	3.02
OTHER	6.50	10.25
TOTAL	52.27	58.85

ASSESSMENT TASK 16 **LEVEL 2**

AT THE RESTAURANT

INSTRUCTION TO INTERVIEWER

GIVE THE INTERVIEWEE CARD O. READ THE QUESTIONS SLOWLY.

INTRODUCTORY SCRIPT

The next question is about two families together at a restaurant. This is what they have ordered.

Q1 What is the total bill, including 12½% service charge, going to be?

Assessment guidelines

	Correct	Incorrect	NA
Answer 1. £53.92	☐ 1	☐ 2	☐ 3 (22)

Performance criterion: Right answer	YES	NO
	☐ 1	☐ 2 (23)

Used Calculator	YES	NO
	☐ 1	☐ 2 (24)

AT THE RESTAURANT

ORDER

Family 1 orders:

2 x Steak & Chips	£4.95 each
2 x Fish & Chips	£3.95 each
1 Bottle of Red Wine	£4.99 each
3 x Ice Cream	£0.95 each
1 x Chocolate Pudding	£1.60 each

Family 2 orders:

1 x Steak & Chips	£4.95 each
2 x Fish & Chips	£3.95 each
1 Bottle of Red Wine	£4.99 each
3 x Ice Cream	£0.95 each

BUYING FURNITURE ON CREDIT

INSTRUCTION TO INTERVIEWER

GIVE THE INTERVIEWEE CARD P. READ THE QUESTIONS SLOWLY. A CALCULATOR MAY BE USED.

THE RESPONDENT MAY NOT CHANGE THEIR ANSWERS TO Q1 AFTER ANSWERING Q2. MARK THEIR FIRST ANSWER

INTRODUCTORY SCRIPT

This time you are deciding whether to pay for a new suite of furniture by taking out a bank loan or using the store's hire purchase scheme. The suite costs £2000 and you want to pay for it over two years. Find out which is cheapest: the bank loan or the hire purchase scheme by answering these questions.

Q1 Which is the cheapest way of paying monthly?

Q2 Which is the cheapest way of paying overall?

Q3 And by how much cheaper is it overall?

Assessment guidelines

		Correct	Incorrect	NA	
Answer 1	Bank loan	☐ 1	☐ 2	☐ 3	(25)
Answer 2	Bank loan	☐ 1	☐ 2	☐ 3	(26)
Answer 3	£21.12 (Need exact answer)	☐ 1	☐ 2	☐ 3	(27)

Performance criterion: Three correct	YES ☐ 1	NO ☐ 2	(28)
Used Calculator	YES ☐ 1	NO ☐ 2	(29)

BUYING FURNITURE ON CREDIT

extra choice
TAKE UP OUR HIRE PURCHASE SCHEME TODAY...
The LEENA range
This versatile range
gives you all the options –
corner suite, sofabed and chair

Bank Loan Rate Table

LOAN	60 month term		48 month term		36 month term		24 month term		12 month term	
	Monthly Repayment	Total Payable	Monthly Repayment	Total Payable	Monthly Repayment	Total Payable	Monthly Repayment	Total Payable	Monthly Repayment	Total Payable
1000	26.01	1560.60	29.97	1438.56	36.72	1321.92	50.47	1211.28	92.22	1106.64
1500	39.02	2341.20	44.95	2157.60	55.08	1982.88	75.71	1817.04	138.33	1659.96
2000	52.02	3121.20	59.94	2877.12	73.44	2643.84	100.94	2422.56	184.44	2213.28
2500	62.72	3763.20	72.70	3489.60	89.68	3228.48	124.13	2979.12	228.53	2742.36
3000	75.26	4515.60	87.24	4187.52	107.61	3873.96	148.96	3575.04	274.24	3290.88
4000	100.35	6021.00	116.33	5583.84	143.48	5165.28	198.61	4766.64	365.65	4387.80
5000	125.44	7526.40	145.41	6979.68	179.35	6456.60	248.26	5958.24	457.06	5484.72

Hire Purchase Loan Rate Table

	LOAN	£500	£2,000	£2,500	£5,000	£10,000
12 MONTHS	Total to repay £	555.96	2223.60	2755.08	5436.12	10872.12
	Monthly repayment £	46.32	185.30	229.59	453.01	906.01
24 MONTHS	Total to repay £	611.04	2443.68	3005.04	5859.84	11719.68
	Monthly repayment £	25.46	101.82	125.21	244.16	488.32
36 MONTHS	Total to repay £	669.24	2676.96	3268.44	6303.96	12607.92
	Monthly repayment £	18.59	74.36	90.79	175.11	350.22
48 MONTHS	Total to repay £	730.56	2923.20	3545.76	6768.00	13536.00
	Monthly repayment £	15.22	60.90	73.87	141.00	282.00
60 MONTHS	Total to repay £	795.60	3181.80	3835.80	7251.60	14503.20
	Monthly repayment £	13.26	53.03	63.93	120.86	241.72

BASICS

INSTRUCTION TO INTERVIEWER

SHOW THE INTERVIEWEE CARD Q. READ QUESTIONS SLOWLY. A CALCULATOR MAY BE USED.

INTRODUCTORY SCRIPT

This is about what people spend on food, fuel and shelter – the basic necessities of life.

Q1 **What percentage of income does a UK person earning £10,000 per year spend on basics?**

Q2 **What percentage of income does someone in the USA earning £30,000 per year spend on basics?**

Q3 **What does the second graph tell us about the relationship between earnings and cost of living since 1993?**

Q4 **What was the percentage difference between the rise in earnings and the rise in the cost of living in 1994?**

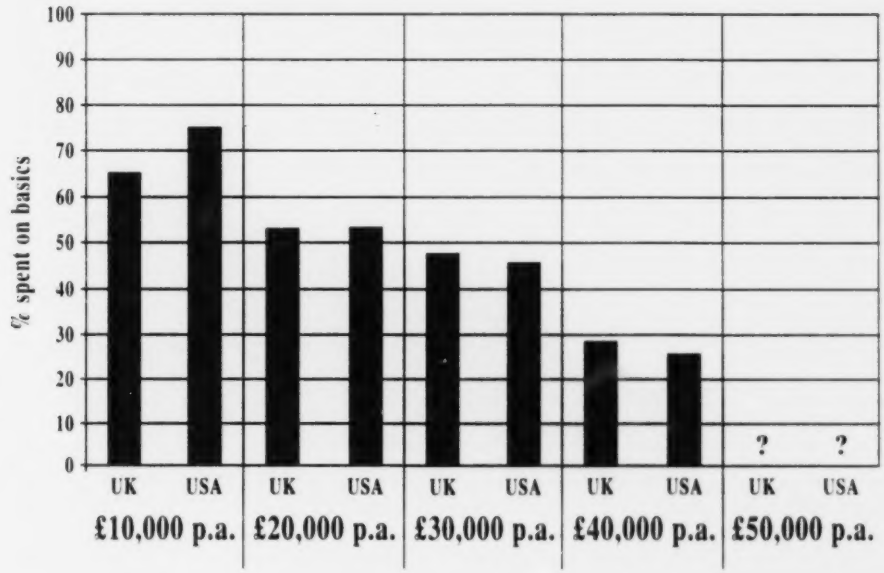
Assessment guidelines

		Correct	Incorrect	NA	
Answer 1	About 65%	☐ 1	☐ 2	☐ 3	(30)
Answer 2	About 45%	☐ 1	☐ 2	☐ 3	(31)
Answer 3	Earnings have risen faster than the cost of living since 1993	☐ 1	☐ 2	☐ 3	(32)
Answer 4	4–5%	☐ 1	☐ 2	☐ 3	(33)

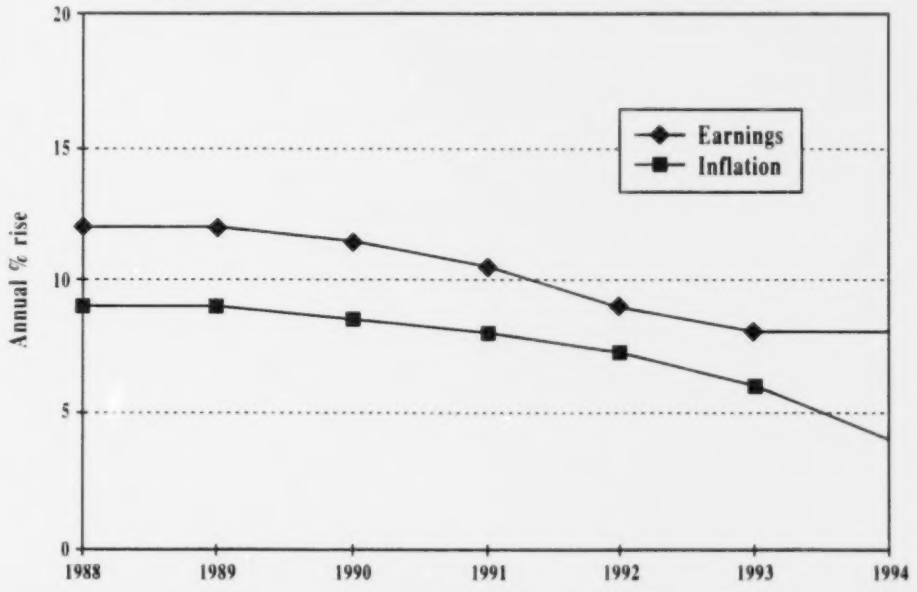
Performance criterion: Three or more correct	YES	NO	
	☐ 1	☐ 2	(34)

Used Calculator	YES	NO	
	☐ 1	☐ 2	(35)

SPENDING ON BASICS GRAPH



EARNING vs COST OF LIVING GRAPH



References

Atkinson, J. Spilsbury, M. and Williams, M. (1993) *The Basic Skills needed at Work: a Directory.* London Basic Skills Agency.

Atkinson, J. and Spilsbury, M. (1993) *Basic Skills and Jobs.* London: Basic Skills Agency.

Bynner, J. (1994) *Skills and Occupations.* Report for the Department of Employment (mimeo).

Bynner, J. and Steedman, J. (1995) *Difficulties with Basic Skills.* London: Basic Skills Agency.

Bynner, J. Morphy, L. and Parson, S. (in press) *Women, Employment and Skills.* in Metcalf, H. (ed.) Women and Skills, London: Policy Studies Institute.

DfEE (1996) Department of Education and Employment. GCSE & GCE A & A/S Examination Results, 1994-95, *Statistical Bulletin*, Issue 96, London: HMSO

Ekinsmyth, C. and Bynner, J (1994) *The Basic Skills of Young Adults.* London: The Basic Skills Agency.

Rutter, M. Tizard, J. and Whitemore, K. (1970) *Education, Health and Behaviour.* London: Longmans.

Wallace, C. (1987) *For Richer and Poorer: Growing up in and out of Work.* London: Tavistock.

THE Basic Skills Agency is the national agency for basic skills in England and Wales and is funded mainly by the Government. However, we are an independent organisation and a company limited by guarantee and a registered charity. We are a not-for-profit organisation.

Our Patron is Her Royal Highness, The Princess Royal and our Chairman is a leading industrialist, Peter Davis, Group Chief Executive of the Prudential Corporation plc. The Director of the Agency is Alan Wells OBE.

The mission of the Basic Skills Agency is to:

> ***'promote continuing improvement in the basic skills of the population of England and Wales.'***

We have four main aims:

1. To *promote* the importance of basic skills and encourage an increase in the take-up of provision.

2. To initiate and support the *development* of basic skills provision.

3. To improve the *effectiveness* of basic skills programmes and teaching.

4. To provide efficient *central services and support* and make the most effective use of the expertise of staff.

Further copies available from
The Basic Skills Agency
Commonwealth House
1-19 New Oxford Street
London WC1A 1NU
Tel: 0171 405 4017
Fax: 0171 440 6626

£6.00

ISBN 1 85990 060 7

The Basic Skills Agency

Reg. Charity No. 1003969